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PRELIMINARY REPORT
INDUSTRY SERIES

1987

Census of Manufactures

MC87-I-34F(P)
Issued July 1989

MISCELLANEOUS FABRICATED METAL PRODUCTS

Industries 3491, 3492, 3493, 3494, 3495, 3496, 3497, 3498, and 3499

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Manufactures for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) Manual.¹

INDUSTRY 3491, INDUSTRIAL VALVES

In the 1987 Census of Manufactures, Industry 3491, Industrial Valves, had employment of 46.8 thousand.

The total value of shipments for establishments classified in this industry was \$4.7 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.8 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3492, FLUID POWER VALVES AND HOSE FITTINGS

In the 1987 Census of Manufactures, Industry 3492, Fluid Power Valves and Hose Fittings, had employment of 28.3 thousand.

¹Standard Industrial Classification Manual: 1987. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

The total value of shipments for establishments classified in this industry was \$2.5 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.0 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE

In the 1987 Census of Manufactures, Industry 3493, Steel Springs, Except Wire, had employment of 5.0 thousand. The employment figure was 4 percent below the 5.2 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$453.8 million.

The cost of materials and services used by establishments in this industry amounted to \$209.7 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3494, VALVES AND PIPE FITTINGS, N.E.C.

In the 1987 Census of Manufactures, Industry 3494, Valves and Pipe Fittings, N.E.C., had employment of 24.9 thousand.

The total value of shipments for establishments classified in this industry was \$2.4 billion.

The cost of materials and services used by establishments in this industry amounted to \$991.0 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3495, WIRE SPRINGS

In the 1987 Census of Manufactures, Industry 3495, Wire Springs, had employment of 19.7 thousand. The employment figure was 10 percent above the 17.9 thousand reported in 1982.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC 20233, or call Kimberly D. Austin (301) 763-7304.

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The total value of shipments for establishments classified in this industry was \$1.6 billion.

The cost of materials and services used by establishments in this industry amounted to \$697.3 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS

In the 1987 Census of Manufactures, Industry 3496, Miscellaneous Fabricated Wire Products, had employment of 35.7 thousand. The employment figure was 3 percent below the 36.8 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$2.8 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.3 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3497, METAL FOIL AND LEAF

In the 1987 Census of Manufactures, Industry 3497, Metal Foil and Leaf, had employment of 11.1 thousand. The employment figure was 3 percent above the 10.8 thousand reported in 1982. Compared with 1986, employment in 1987 increased 10 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was \$2.3 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.5 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3498, FABRICATED PIPE AND FITTINGS

In the 1987 Census of Manufactures, Industry 3498, Fabricated Pipe and Fittings, had employment of 19.7 thousand. The employment figure was 40 percent below the 32.7 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$1.7 billion.

The cost of materials and services used by establishments in this industry amounted to \$899.4 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.

In the 1987 Census of Manufactures, Industry 3499, Fabricated Metal Products, N.E.C., had employment of 74.5 thousand. The employment figure was 15 percent above the 65.0 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$6.4 billion.

The cost of materials and services used by establishments in this industry amounted to \$2.9 billion in 1987. Data on specific materials consumed appear in table 3.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone
Census/ASM		
Durables	Kenneth Hansen	(301) 763-7304
Nondurables	Michael Zampogna	(301) 763-2510
Current Industrial Reports		
Durables	Malcolm Bernhardt	(301) 763-2518
Nondurables	Thomas Flood	(301) 763-5911
Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Year ¹	Com- panies ² (no.)	All establishments ³		All employees		Production workers			Value added by manufac- ture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expendi- tures (million dollars)	End-of- year inventories ⁴ (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spe- cial- ization (per- cent)	Cover- age (per- cent)
1987 Census ----	INDUSTRY 3491, INDUSTRIAL VALVES ⁶														
	(NA)	384	273	46.8	1 223.0	30.2	59.9	660.4	2 853.3	1 815.2	4 665.3	151.8	1 288.6	(NA)	(NA)
	INDUSTRY 3492, FLUID POWER VALVES AND HOSE FITTINGS ⁶														
1987 Census ----	(NA)	409	218	28.3	694.7	18.7	37.6	413.0	1 461.4	1 009.3	2 472.4	79.5	707.7	(NA)	(NA)
	INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE														
	(NA)	146	61	5.0	121.8	3.6	7.3	77.8	247.9	209.7	453.8	18.0	80.8	(NA)	(NA)
1986 ASM ----	(NA)	(NA)	(NA)	4.7	109.5	3.5	6.6	71.5	221.6	191.6	419.3	15.4	75.3	(NA)	(NA)
1985 ASM ----	(NA)	(NA)	(NA)	5.2	112.4	3.8	7.1	75.1	231.7	205.8	434.2	9.5	81.7	(NA)	(NA)
1984 ASM ----	(NA)	(NA)	(NA)	5.3	118.4	4.0	7.6	80.1	219.7	223.9	432.7	59.4	82.8	(NA)	(NA)
1983 ASM ----	(NA)	(NA)	(NA)	4.9	102.5	3.7	6.9	67.9	208.3	205.0	414.5	5.9	86.3	(NA)	(NA)
1982 Census ----	123	137	55	5.2	103.5	3.8	6.8	67.3	204.5	204.8	413.5	7.3	86.0	81	59
1981 ASM ----	(NA)	(NA)	(NA)	5.7	109.7	4.3	8.0	74.3	239.2	226.4	462.7	13.2	74.4	(NA)	(NA)
1980 ASM ----	(NA)	(NA)	(NA)	6.3	110.3	4.7	8.9	74.3	220.7	235.4	458.6	22.0	72.8	(NA)	(NA)
1979 ASM ----	(NA)	(NA)	(NA)	8.2	135.7	6.5	12.9	98.9	300.2	300.2	593.7	10.7	88.1	(NA)	(NA)
1978 ASM ----	(NA)	(NA)	(NA)	8.7	130.1	6.9	13.7	93.9	278.5	289.2	568.5	17.6	91.1	(NA)	(NA)
1977 Census ----	116	131	59	8.2	119.8	6.6	13.3	88.0	249.9	259.3	500.5	14.1	81.6	84	72
1976 ASM ----	(NA)	(NA)	(NA)	8.5	106.8	6.8	13.3	77.0	199.7	279.0	472.7	8.3	82.5	(NA)	(NA)
1975 ASM ----	(NA)	(NA)	(NA)	7.3	82.9	5.7	11.2	56.8	162.2	221.7	387.4	28.6	67.8	(NA)	(NA)
1974 ASM ----	(NA)	(NA)	(NA)	10.5	110.0	8.6	16.2	81.0	203.5	257.2	455.7	16.3	86.0	(NA)	(NA)
1973 ASM ----	(NA)	(NA)	(NA)	9.2	95.7	7.2	15.1	71.0	169.9	231.5	399.1	8.4	68.9	(NA)	(NA)
1972 Census ----	99	110	53	8.5	79.9	6.7	13.3	56.9	149.7	183.1	331.4	6.6	57.4	81	73
1977 Census ----	INDUSTRY 3494, VALVES AND PIPE FITTINGS, N.E.C. ⁶														
	(NA)	408	229	24.9	563.0	17.5	34.8	349.0	1 359.3	991.0	2 359.4	61.7	550.0	(NA)	(NA)
	INDUSTRY 3495, WIRE SPRINGS														
1987 Census ----	(NA)	406	214	19.7	406.4	16.0	32.2	289.8	879.7	697.3	1 579.9	49.2	156.4	(NA)	(NA)
1986 ASM ----	(NA)	(NA)	(NA)	21.0	438.5	17.6	35.4	322.0	882.3	696.9	1 574.0	60.7	162.7	(NA)	(NA)
1985 ASM ----	(NA)	(NA)	(NA)	21.9	438.1	18.5	36.9	316.6	869.1	708.3	1 575.7	62.2	159.6	(NA)	(NA)
1984 ASM ----	(NA)	(NA)	(NA)	20.2	388.6	16.6	32.4	263.4	804.1	649.2	1 441.2	571.2	154.8	(NA)	(NA)
1983 ASM ----	(NA)	(NA)	(NA)	19.7	339.8	16.3	31.0	245.5	690.8	585.2	1 270.2	42.9	138.0	(NA)	(NA)
1982 Census ----	322	432	236	17.9	294.1	14.5	27.5	208.8	596.8	498.7	1 104.3	31.9	116.4	92	93
1981 ASM ----	(NA)	(NA)	(NA)	16.3	269.3	13.4	26.9	197.8	527.9	458.4	983.2	29.1	110.8	(NA)	(NA)
1980 ASM ----	(NA)	(NA)	(NA)	18.6	261.3	15.3	30.5	191.8	513.2	462.7	981.8	29.4	109.0	(NA)	(NA)
1979 ASM ----	(NA)	(NA)	(NA)	21.4	274.8	17.8	36.4	201.9	536.0	531.8	1 063.1	36.2	113.1	(NA)	(NA)
1978 ASM ----	(NA)	(NA)	(NA)	22.7	283.0	18.8	36.9	206.6	570.3	487.6	1 051.4	34.3	114.7	(NA)	(NA)
1977 Census ----	254	332	226	21.7	253.5	18.0	35.4	187.8	497.7	458.6	957.7	27.6	104.5	92	92
1976 ASM ----	(NA)	(NA)	(NA)	19.4	208.9	16.4	32.9	154.2	421.6	367.3	782.8	18.6	103.3	(NA)	(NA)
1975 ASM ----	(NA)	(NA)	(NA)	18.8	184.4	15.5	30.2	133.1	359.3	316.1	680.0	12.7	92.5	(NA)	(NA)
1974 ASM ----	(NA)	(NA)	(NA)	22.3	201.6	18.9	37.7	152.6	411.3	318.0	718.7	17.7	109.0	(NA)	(NA)
1973 ASM ----	(NA)	(NA)	(NA)	24.4	208.9	20.6	41.3	158.9	382.0	300.0	678.0	15.9	82.1	(NA)	(NA)
1972 Census ----	206	284	216	23.7	193.2	19.8	40.0	144.5	340.7	273.3	611.9	12.9	66.5	88	93
1987 Census ----	INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS														
	(NA)	1 148	448	35.7	687.5	26.7	54.2	427.3	1 504.0	1 283.4	2 786.7	65.5	421.4	(NA)	(NA)
	(NA)	(NA)	(NA)	37.2	678.6	28.3	55.7	429.3	1 447.1	1 337.1	2 775.5	68.7	449.2	(NA)	(NA)
1985 ASM ----	(NA)	(NA)	(NA)	37.4	671.2	28.3	54.7	429.7	1 406.4	1 338.8	2 744.4	5106.1	453.7	(NA)	(NA)
1984 ASM ----	(NA)	(NA)	(NA)	39.7	682.9	30.4	60.0	437.0	1 503.5	1 364.6	2 837.5	72.3	476.4	(NA)	(NA)
1983 ASM ----	(NA)	(NA)	(NA)	37.9	630.3	28.6	56.1	406.4	1 344.6	1 247.4	2 597.0	58.4	466.3	(NA)	(NA)
1982 Census ----	1 109	1 182	445	36.8	580.3	27.8	53.2	375.1	1 167.3	1 172.0	2 358.4	67.0	443.0	93	52
1981 ASM ----	(NA)	(NA)	(NA)	27.4	461.8	21.1	41.7	302.2	927.2	1 023.9	1 938.6	67.4	324.0	(NA)	(NA)
1980 ASM ----	(NA)	(NA)	(NA)	27.3	420.2	21.4	41.7	270.4	840.4	953.9	1 800.0	50.7	289.6	(NA)	(NA)
1979 ASM ----	(NA)	(NA)	(NA)	29.9	413.9	23.9	47.1	271.7	918.8	967.1	1 860.8	50.6	302.2	(NA)	(NA)
1978 ASM ----	(NA)	(NA)	(NA)	32.8	376.6	25.8	51.1	251.1	753.4	793.5	1 539.2	61.9	265.7	(NA)	(NA)
1977 Census ----	1 048	1 114	387	32.4	354.5	25.5	49.4	232.2	721.7	728.3	1 435.0	47.3	252.8	91	37
1976 ASM ----	(NA)	(NA)	(NA)	30.3	303.9	24.7	47.9	210.4	624.2	657.5	1 266.2	38.2	223.0	(NA)	(NA)
1975 ASM ----	(NA)	(NA)	(NA)	28.0	270.3	22.5	43.8	185.0	565.0	575.6	1 139.1	27.2	221.4	(NA)	(NA)
1974 ASM ----	(NA)	(NA)	(NA)	31.6	282.5	25.7	50.1	198.8	578.9	587.1	1 137.9	44.4	224.1	(NA)	(NA)
1973 ASM ----	(NA)	(NA)	(NA)	32.2	259.1	25.9	50.4	178.8	532.9	467.6	994.5	29.9	157.8	(NA)	(NA)
1972 Census ----	1 157	1 211	412	33.2	261.4	26.5	51.7	177.3	504.4	462.7	959.7	28.9	158.7	93	39
1987 Census ----	INDUSTRY 3497, METAL FOIL AND LEAF														
	(NA)	118	68	11.1	327.8	7.7	16.5	208.8	889.9	1 465.4	2 344.1	90.1	369.5	(NA)	(NA)
	(NA)	(NA)	(NA)	10.1	270.8	7.4	15.5	180.3	764.8	1 279.4	2 046.9	50.9	318.7	(NA)	(NA)
1985 ASM ----	(NA)	(NA)	(NA)	11.3	286.5	8.3	17.0	190.4	819.3	1 381.0	2 198.5	65.4	344.2	(NA)	(NA)
1984 ASM ----	(NA)	(NA)	(NA)	11.4	287.3	8.5	17.4	194.2	762.8	1 445.2	2 191.1	58.4	367.9	(NA)	(NA)
1983 ASM ----	(NA)	(NA)	(NA)	10.5	249.7	7.7	15.5	173.8	702.3	1 228.8	1 907.5	41.9	313.4	(NA)	(NA)
1982 Census ----	80	97	68	10.8	243.1	8.0	16.0	172.4	662.8	1 169.7	1 846.3	40.1	287.2	81	82
1981 ASM ----	(NA)	(NA)	(NA)	8.4	171.6	6.1	12.5	118.1	425.7	837.7	1 263.6	37.5	172.7	(NA)	(NA)
1980 ASM ----	(NA)	(NA)	(NA)	9.0	172.8	6.6	13.0	117.0	400.7	754.3	1 146.4	35.2	175.0	(NA)	(NA)
1979 ASM ----	(NA)	(NA)	(NA)	8.9	154.3	6.6	13.2	106.8	362.4	690.3	1 037.2	24.0	159.4	(NA)	(NA)
1978 ASM ----	(NA)	(NA)	(NA)	9.5	148.0	7.0	13.9	103.2	342.1	710.8	1 047.8	38.9	159.4	(NA)	(NA)
1977 Census ----	63	77	52	9.4	125.8	6.6	13.0	87.1	298.0	607.2	895.1	16.1	141.1	80	63
1976 ASM ----	(NA)	(NA)	(NA)	6.0	75.6	4.3	8.7	49.7	177.7	303.8	477.4	11.2	74.8	(NA)	(NA)
1975 ASM ----	(NA)	(NA)	(NA)	5.5	65.7	4.1	8.1	41.9	136.9	248.4	389.2	11.7	64.6	(NA)	(NA)
1974 ASM ----	(NA)	(NA)	(NA)	5.9	64.2	4.3	9.1	42.5	169.6	261.5	420.5	17.0	78.1	(NA)	(NA)
1973 ASM ----	(NA)	(NA)	(NA)	5.8	57.6	4.3	8.7	38.5	139.2	191.7	332.5	11.3	49.6	(NA)	(NA)
1972 Census ----	54	63	40	5.4	51.9	3.9	8.1	33.2	126.5	157.6	282.0	8.2	43.8	80	52

See footnotes at end of table.

Table 1. **Historical Statistics for the Industry: 1987 and Earlier Years—Con.**

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix.]

Year ¹	Companies ² (no.)	All establishments ³		All employees		Production workers			Value added by manufac- ture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expendi- tures (million dollars)	End-of- year inventories ⁴ (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spe- cial- ization (per- cent)	Cover- age (per- cent)
INDUSTRY 3498, FABRICATED PIPE AND FITTINGS															
1987 Census ----	(NA)	715	278	19.7	421.1	14.7	29.5	277.8	837.8	899.4	1 732.2	35.8	346.0	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	20.9	473.8	15.1	28.8	303.9	926.4	1 122.1	2 071.1	⁵ 47.0	375.2	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	25.1	547.3	18.5	34.6	360.6	1 038.8	1 375.2	2 476.5	⁵ 78.9	466.3	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	25.2	563.9	18.9	36.7	380.1	1 079.8	1 552.9	2 679.8	52.7	624.0	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	29.3	596.1	21.7	42.2	399.1	1 207.2	1 460.2	2 776.1	⁵ 47.8	751.0	(NA)	(NA)
1982 Census ----	704	779	348	32.7	650.7	23.8	46.3	423.5	1 437.5	1 666.7	3 105.8	137.2	897.0	97	94
1981 ASM -----	(NA)	(NA)	(NA)	32.0	589.7	24.5	47.0	405.8	1 442.1	1 567.8	2 934.0	135.3	677.4	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	32.0	531.9	24.4	46.6	364.2	1 164.4	1 330.4	2 487.0	80.6	520.1	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	32.9	488.9	25.9	50.2	345.6	1 145.3	1 256.7	2 408.3	67.0	471.0	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	30.2	433.8	23.2	44.0	295.9	1 006.0	1 217.3	2 183.4	58.1	480.0	(NA)	(NA)
1977 Census ----	513	579	278	28.2	390.0	21.4	40.6	265.4	887.2	1 015.4	1 872.7	51.0	418.4	94	93
1976 ASM -----	(NA)	(NA)	(NA)	25.5	354.1	19.8	38.1	260.2	726.8	896.2	1 646.7	57.5	335.1	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	20.7	251.6	15.6	30.3	170.1	637.0	710.7	1 307.2	49.1	357.7	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	20.9	225.8	15.8	31.2	149.1	603.4	603.3	1 158.8	31.5	269.8	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	19.4	184.8	14.6	28.5	126.1	413.8	443.6	846.4	19.9	181.7	(NA)	(NA)
1972 Census ----	373	423	202	17.5	164.7	13.2	25.9	112.4	363.1	352.2	704.4	14.7	157.5	95	90
INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.															
1987 Census ----	(NA)	3 572	853	74.5	1 576.9	54.2	108.7	975.9	3 501.8	2 870.9	6 354.0	156.3	907.3	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	71.4	1 374.9	53.6	99.0	899.9	3 063.4	2 589.4	5 627.8	138.7	816.9	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	70.0	1 277.8	53.5	107.0	835.6	2 809.1	2 395.4	5 216.2	172.4	762.8	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	72.5	1 213.4	55.8	112.2	790.6	2 718.3	2 441.8	5 117.5	167.3	779.6	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	61.1	1 061.5	46.5	89.5	700.9	2 382.9	2 025.5	4 399.8	97.3	714.4	(NA)	(NA)
1982 Census ----	2 910	2 982	810	65.0	1 105.8	48.8	94.2	715.2	2 304.5	2 039.8	4 406.0	114.1	709.1	92	87
1981 ASM -----	(NA)	(NA)	(NA)	75.2	1 223.8	56.9	114.7	803.8	2 674.1	2 569.9	5 249.4	145.1	776.4	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	77.0	1 139.7	58.2	116.3	749.5	2 578.8	2 454.3	5 043.3	174.4	768.4	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	80.5	1 095.0	61.8	121.1	713.8	2 415.8	2 380.1	4 724.7	156.9	778.4	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	71.8	932.7	54.1	107.4	594.5	2 084.5	1 953.0	3 974.5	107.7	660.8	(NA)	(NA)
1977 Census ----	3 142	3 238	794	70.8	844.7	54.1	104.8	547.8	1 814.5	1 643.5	3 429.2	94.8	574.3	89	83
1976 ASM -----	(NA)	(NA)	(NA)	66.7	765.0	50.5	94.6	495.4	1 691.4	1 475.8	3 170.2	92.7	514.9	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	63.2	668.6	47.5	88.3	437.4	1 468.8	1 381.5	2 863.0	64.1	502.4	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	69.3	644.4	51.6	97.6	433.2	1 450.9	1 280.0	2 694.5	85.5	460.5	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	64.6	565.0	49.6	96.3	370.1	1 157.9	991.2	2 128.0	38.9	346.9	(NA)	(NA)
1972 Census ----	2 254	2 343	653	61.8	510.7	47.2	92.2	337.7	1 047.4	896.9	1 938.6	61.8	301.1	89	74

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 3491, 8%; SIC 3492, 4.4%; SIC 3493, 11.9%; SIC 3494, 26.7%; SIC 3495, 9.2%; SIC 3496, 23%; SIC 3497, 6.1%; SIC 3498, 34.4%; and SIC 3499, 36.1%

¹In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during year.

⁴Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

⁵Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

⁶Industry definition is new for 1987 Census of Manufactures. An explanation of the Standard Industrial Classification revision will appear in the final industry series text that supercedes this report.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3491- --	INDUSTRIAL VALVES						
	Total -----	(NA)	(X)	4 256.3	(NA)	(X)	4 828.0
34911 --	Gates, globes, and check valves -----	(NA)	(X)	686.2	(NA)	(X)	1 035.5
	Gates, globes, angles, straightway (Y-type), checks, stop and check, cross, 3- and 4-way, etc. (including manual and power-operated on/off valves, but excluding automatic valves and water works):						
34911 11	Iron body, including ductile or modular, all pressures (excluding IBBM, AWWA,UL) ----- 1,000 s	26	(S)	113.7	22	**76.1	96.6
	tons..						
34911 21	Carbon steel: ----- 1,000 s	35	(S)	122.0	37	**104.8	382.2
	Cast ----- do..	16	(S)	70.9	26	**20.5	177.9
34911 23	Forged ----- do..	37	(S)	138.4	42	(S)	155.4
34911 34	Alloy steel and other metals ----- do..	(NA)	(S)	156.9	31	30.7	177.5
34911 38	Brass and bronze (125 lb w.s.p. or more) ----- do..	8	**1.9	15.5	10	**2.6	10.3
34911 43	Actuators (power-operated on/off mounted) ----- do..	29	(X)	68.6	21	(X)	35.6
34911 52	Parts ----- do..	(NA)	(X)	-	(NA)	(X)	(NA)
34911 00	Gates, globes, and check valves, n.s.k. -----	(NA)	(X)	401.2	(NA)	(X)	317.7
34912 --	Valves for water works -----	(NA)	(X)	401.2	(NA)	(X)	317.7
	Water works and municipal equipment (IBBM, AWWA, and UL):						
34912 01	IBBM gate line and tapping valves ----- 1,000 s	8	*83.8	142.7	13	69.9	162.3
	tons..						
34912 11	UL valves (all pressures): ----- 1,000 s	3	**4.7	10.0	5	(S)	7.2
	Check valves ----- do..	10	**9.8	19.7	8	11.4	23.3
34912 21	All others, including pest indicators ----- do..	5	*9.4	18.8	3	7	1.6
34912 23	Tapping sleeves and crosses ----- do..	7	(S)	75.4	7	22.5	32.6
34912 31	Fire hydrants ----- do..						
34912 35	AWWA valves (all pressures): ----- 1,000 s	11	(S)	52.5	8	(S)	13.4
	Check valves ----- do..	15	(S)	55.7	6	(S)	35.3
34912 41	Butterfly valves ----- do..	10	(X)	26.3	20	(X)	42.0
34912 43	Parts ----- do..	(NA)	(X)	-	(NA)	(X)	(NA)
34912 00	Valves for water works, n.s.k. -----	(NA)	(X)	519.2	(NA)	(X)	516.4
34913 --	Ball valves -----	(NA)	(X)	519.2	(NA)	(X)	516.4
	Ball valves, all pressures, types, and metals, (including manual and power-operated on/off valves, but excluding automatic control valves, solenoid valves, and regulators):						
34913 11	Iron (including ductile) ----- thousands..	7	(S)	18.8	7	(S)	34.0
34913 23	Brass and bronze ----- do..	27	(S)	153.0	26	*3 648.1	91.0
34913 35	Carbon steel (cast and fabricated) ----- do..	28	(S)	150.5	20	*3 088.5	251.8
34913 47	Alloy steel and other metals ----- do..	24	(S)	132.8	19	725.3	58.6
34913 59	Actuators (power-operated on/off mounted) ----- do..	14	(S)	35.3	11	25.4	21.5
34913 61	Parts ----- do..	13	(X)	28.8	20	(X)	59.5
34913 00	Ball valves, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	(NA)
34914 --	Butterfly valves -----	(NA)	(X)	195.3	(NA)	(X)	348.8
	Butterfly valves, all metals, pressures, and types, including manual and power-operated on/off valves, but excluding automatic control valves and regulators and all IBBW, AWWA, and UL valves:						
	Industrial types (including elastomer and fluoroelastics lined):						
34914 11	Iron (including ductile) ----- thousands..	20	(S)	44.7	23	(S)	145.0
34914 13	Brass and bronze ----- do..	2	(S)	19.7	8	*589.7	15.3
34914 15	Carbon steel (cast and fabricated) ----- do..	6	(S)	41.3	11	*18.9	14.3
34914 17	Alloy steel and other metals ----- do..	7	(S)	41.3	9	**99.8	23.8
	High pressure types (shut-off to full ANSI class ratings):						
34914 21	Iron ----- thousands..	2	**37.2	30.1	4	62.7	24.3
34914 23	Carbon steel (cast and fabricated) ----- do..	9	(S)	14.2	11	**57.7	56.1
34914 25	Alloy steel and other metals ----- do..	6	(S)	23.6	13	(S)	36.6
34914 31	Actuators (power-operated on/off mounted) ----- do..	9	(S)	21.7	10	43.7	12.6
34914 61	Parts ----- do..	11	(X)	21.7	15	(X)	20.8
34914 00	Butterfly valves, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	(NA)
34915 --	Plug valves -----	(NA)	(X)	212.9	(NA)	(X)	323.0
	Plug valves, all metals, pressures, and types (such as lubricated, nonlubricated, cylindrical eccentric, sleeve lined) (including manual and power-operated on/off valves, but excluding automatic control valves, solenoid valves, and regulators):						
34915 11	Iron (including ductile) ----- thousands..	14	(S)	66.0	15	(S)	94.1
34915 23	Carbon steel ----- do..	9	(S)	54.3	13	**291.3	101.5
34915 35	Alloy steel and other metals ----- do..	17	**279.4	63.7	13	**795.7	71.8
34915 47	Actuators (power-operated on/off mounted) ----- do..	7	(S)	6.7	6	*54.5	16.8
34915 61	Parts ----- do..	6	(X)	22.2	15	(X)	38.8
34915 00	Plug valves, n.s.k. -----	-	(X)	-	(NA)	(X)	(NA)
34916 --	Industrial valves, n.e.c. -----	(NA)	(X)	*648.0	(NA)	(X)	695.5
34916 11	Cocks and stops, all metals, pressures, and types ----- thousands..	4	(³)	(³)	14	(S)	39.2
34916 23	Diaphragm and pinch valves, including operators, all metals, pressures, and types ----- 1,000 s	11	(³)	(³)	9	**97.4	36.1
	tons..						
34916 31	Pop safety valves and relief valves (more than 15 lb w.s.p.): ----- 1,000 s	15	(³)	(³)	20	**40.9	180.5
	tons..	5	(³)	(³)	11	(S)	11.4
34916 33	Brass and bronze ----- do..	5	(³)	(³)	10	**79.3	56.0
34916 41	Compressed gas cylinder valves ----- thousands..	5	(³)	(³)	10	**79.3	56.0

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3491--	INDUSTRIAL VALVES—Con.						
34916 --	Industrial valves, n.e.c.—Con.						
34916 53	Steam traps (more than 15 lb w.s.p.)	4	(3)	(3)	9	(S)	59.5
34916 65	Thru conduit pipeline valves	3	(3)	(3)	4	(4)	(4)
	Power actuators (sold separately):						
34916 77	Pneumatic actuation	8	(3)	(3)	7	(S)	19.4
34916 79	All other actuation	8	(3)	(3)	7	(S)	5.9
34916 98	Other metal valves (excluding control valves, regulators, and solenoid valves)	45	(3)	(3)	80	*263.0	*287.5
34916 00	Industrial valves, n.e.c., n.s.k.	(NA)	(X)	3648.0	(NA)	(X)	(NA)
34917 --	Nuclear valves	(NA)	(X)	386.2	(NA)	(X)	152.0
	Gate, globe, and check valves:						
34917 11	Cast-carbon steel and low alloy	6	(NA)	386.2	8	(S)	24.0
34917 13	Forged-carbon steel and low alloy	4			10	(S)	44.6
34917 15	Corrosion-resistant alloy steel	5			9	**37.5	23.8
34917 27	Ball valves, butterfly valves, plug valves (on/off only)	4			8	(S)	10.2
34917 31	Actuators (mounted, power-operated on/off)	7			10	(S)	13.3
34917 39	Automated control valves	2			4	*103.9	9.9
34917 98	Parts	5			15	(X)	26.1
34917 00	Nuclear valves, n.s.k.	(NA)			(NA)	(X)	-
34918 --	Automatic valves (regulating and control type) and parts (except nuclear):						
34918 00	Automatic regulating and control valves—power operated valves designed for modulating (throttling) service (excluding power-operated on/off valves) (for additional detail, see Current Industrial Report MA-38B, Selected Instruments and Related Products)	120	(X)	1 160.2	154	(X)	1 233.0
34919 --	Solenoid valves:						
34919 00	Solenoid valves of the type actuated by movement of a plunger or armature due to magnetic field created by electrically energizing a solenoid coil (excluding torque motor rotary type actuated valves, servovalves, and fluid power hydraulic and pneumatic solenoid valves) (for additional detail, see Current Industrial Report MA-38B, Selected Instruments and Related Products)	33	(X)	299.3	39	(X)	206.1
34910 --	Industrial valves, n.s.k.	(NA)	(X)	47.9	(NA)	(X)	(NA)
34910 00	Industrial valves, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	-	(NA)	(X)	(NA)
34910 02	Industrial valves, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	47.9	(NA)	(NA)	(NA)
3492--	FLUID POWER VALVES AND HOSE FITTINGS						
	Total	(NA)	(X)	2 752.8	(NA)	(X)	1 879.1
34921 --	Hydraulic valves, all pressures (except aerospace type):						
34921 00	Hydraulic valves, all pressures, except aerospace type (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	127	(X)	515.3	88	(X)	435.3
34922 --	Pneumatic valves, except aerospace type:						
34922 00	Pneumatic valves, all pressures, except aerospace type (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	84	(X)	375.7	68	(X)	339.2
34923 --	Aerospace type hydraulic and pneumatic valves:						
34923 00	Aerospace type hydraulic and pneumatic valves (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	79	(X)	377.2	58	(X)	262.2
34924 --	Fittings for metal and plastics tubing used in fluid and power transfer systems, except aerospace type:						
34924 00	Fittings for metal and plastics tubing used in fluid and power transfer systems (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	83	(X)	438.6	29	(X)	302.7
34925 --	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type:						
34925 00	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	90	(X)	522.1	47	(X)	319.7
34926 --	Aerospace type hydraulic and pneumatic hose or tube end fittings and assemblies:						
34926 00	Aerospace type hydraulic and pneumatic hose or tube end fittings and assemblies (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	64	(X)	303.9	18	(X)	119.0
34927 --	Parts for fluid power valves:						
34927 00	Parts for fluid power valves (for additional detail, see Current Industrial Report MA-35N, Fluid Power Products, Including Aerospace)	105	(X)	165.3	36	(X)	101.0
34920 --	Fluid power valves and hose fittings, n.s.k.	(NA)	(X)	54.6	(NA)	(X)	(NA)
34920 00	Fluid power valves and hose fittings, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	-	(NA)	(X)	(NA)
34920 02	Fluid power valves and hose fittings, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	54.6	(NA)	(NA)	(NA)

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments¹		Number of companies with shipments of \$100,000 or more	Product shipments¹	
			Quantity²	Value (million dollars)		Quantity²	Value (million dollars)
3493- --	STEEL SPRINGS, EXCEPT WIRE						
	Total -----	(NA)	(X)	554.9	(NA)	(X)	511.3
34931 --	Hot formed springs -----	(NA)	(X)	349.2	(NA)	(X)	395.8
	Hot formed, helical springs, hot wound:						
	Automobile coil springs:						
34931 05	Shipments for domestic replacement and shipments for export, including shipments to U.S. motor vehicle manufacturers for resale ----- 1,000 s	14	(S)	177.0	11	(S)	29.5
34931 06	Shipments to U.S. motor vehicle manufacturers or their suppliers for use in original equipment ----- do..	4	(S)	9.6	5	(S)	161.3
34931 16	Locomotive and railroad car and other helical springs, hot wound ----- do..	5	11.0	12.9	6	(⁵)	(⁵)
	Hot formed leaf springs for automotive (auto, truck, bus, trailer, etc.):						
34931 55	Shipments for domestic replacement and shipments for export, including shipments to U.S. motor vehicle manufacturers for resale ----- 1,000 s	-	316.5	53.5	13	52.3	57.8
34931 57	Shipments to U.S. motor vehicle manufacturers or their suppliers for use in original equipment ----- do..	6	(S)	51.9	15	106.0	73.0
34931 99	Other hot formed steel springs, including torsion bar springs, and leaf springs for tractors, farm equipment, locomotive, etc. ----- do..	8	(S)	24.0	23	(S)	38.3
34931 00	Hot formed springs, n.s.k. -----	(NA)	(X)	20.3	(NA)	(X)	⁵1.2
34932 --	Cold formed springs -----	(NA)	(X)	151.1	(NA)	(NA)	(NA)
34932 10	Cold formed flat springs made of sheet or strip ----- 1,000 s	55	(S)	129.2	44	(S)	94.8
34932 20	Cold formed helical suspension springs ----- do..	17	(S)	18.2			
34932 00	Cold formed springs, n.s.k. -----	(NA)	(X)	3.7	(NA)	(NA)	(NA)
34930 --	Steel springs, except wire, n.s.k. -----	(NA)	(X)	54.6	(NA)	(X)	20.8
34930 00	Steel springs, except wire, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	(X)	38.6	(NA)	(X)	4.4
34930 02	Steel springs, except wire, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	(X)	16.0	(NA)	(X)	16.4
3494- --	VALVES AND PIPE FITTINGS						
	Total -----	(NA)	(X)	2 287.4	(NA)	(X)	1 711.4
34944 --	Plumbing and heating valves and specialties, except plumbers' brass goods -----	(NA)	(X)	391.4	(NA)	(X)	220.2
34944 21	Safety and relief valves ----- 1,000 s	12	(S)	62.9	26	**166.6	101.5
34944 31	Check valves ----- do..	9	(S)	26.6			
34944 41	All other plumbing and heating valves, including gates, globes, angles, 3- and 4-way drain, brass and bronze (less than 125 lb w.s.p.) ----- do..	21	(S)	140.4	28	(NA)	115.0
34944 51	Plumbing and heating valve specialties ----- do..	10	(S)	27.9			
34944 99	Parts -----	16	(X)	64.4			
34944 00	Plumbing and heating valves and specialties, except plumbers' brass goods, n.s.k. -----	(NA)	(X)	69.3	(NA)	(X)	3.7
34945 --	Metal fittings, flanges, and unions for piping systems -----	(NA)	(X)	1 344.2	(NA)	(X)	1 491.2
	Gray iron:						
34945 11	Gray iron fittings, flanges, and unions (not for cast iron pipe) ----- 1,000 s	10	**29.2	74.5	12	*19.0	51.2
34945 12	Gray iron grooved, fittings, and couplings ----- do..	5	(S)	8.9	(NA)	(NA)	(NA)
	Malleable iron:						
34945 13	Fittings and flanges, including couplings, reducers, caps, etc. ----- 1,000 s	7	44.6	98.8	27	81.9	179.4
34945 14	Grooved fittings and couplings ----- do..	3	(D)	(D)	(NA)	(NA)	(NA)
34945 15	Unions and union fittings ----- do..	9	7.8	27.4	13	16.3	65.8
	Ductile iron:						
34945 16	Fittings, flanges, and unions ----- mil lb..	5	(S)	2.7	(NA)	(NA)	(NA)
34945 17	Grooved fittings and couplings ----- do..	1	(D)	(D)	(NA)	(NA)	(NA)
	Copper, brass, or bronze, including solder and threaded types:						
34945 18	Cast bronze or bronze fittings, flanges, and unions ----- mil lb..	15	**53.0	121.7	23	*56.2	129.1
34945 19	Wrought copper and wrought copper alloy fittings, flanges, and unions ----- do..	16	**112.9	286.1	16	**51.6	123.0
34945 21	Cast carbon and alloy steel fittings, flanges, and unions ----- 1,000 s	10	(S)	25.0	7	(S)	35.0
	Forged carbon, alloy, and stainless steel:						
34945 23	Fittings, flanges, and unions, socket-weld or threaded type ----- 1,000 s	26	(S)	151.7	36	**31.0	128.8
	Flanges, butt-welding type:						
34945 32	Carbon steel ----- 1,000 s	13	(S)	37.7	23	*123.9	105.7
34945 34	Alloy steel ----- do..	7	**5	2.5	8	(S)	27.8
34945 37	Stainless steel ----- do..	10	(S)	14.3	10	4.2	26.6
	Fittings, butt-welding type:						
34945 42	Carbon steel ----- 1,000 s	10	(S)	35.7	14	35.5	157.2
34945 44	Alloy steel ----- do..	5	(S)	3.6	6	(S)	5.6
34945 47	Stainless steel ----- do..	11	(S)	19.1	7	*1.9	10.8
34945 71	Pipe hangers and supports (not including metal framing) -----	11	(X)	38.1	17	(NA)	164.2

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3494--	VALVES AND PIPE FITTINGS—Con.						
34945 --	Metal fittings, flanges, and unions for piping systems—Con.						
34945 85	Pipe couplings ----- 1,000 s tons..	19	(S)	94.6	26	42.6	102.0
34945 99	All other metal fittings and unions including ductile iron and aluminum, for piping system (including metal framing and fittings for mechanical and electrical supports) ----- do..	32	(S)	97.4	53	(S)	156.5
34945 00	Metal fittings, flanges, and unions for piping systems, n.s.k. -----	(NA)	(X)	165.9	(NA)	(X)	22.6
34940 --	Valves end pipe fittings, n.s.k. -----	(NA)	(X)	551.8	(NA)	(X)	(NA)
34940 00	Valves end pipe fittings, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	489.2	(NA)	(X)	(NA)
34940 02	Valves end pipe fittings, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	62.6	(NA)	(X)	(NA)
3495--	WIRE SPRINGS						
	Total -----	(NA)	(X)	1 474.5	(NA)	(X)	1 064.2
34952 --	Precision mechanical springs -----	(NA)	(X)	517.3	(NA)	(X)	480.7
34952 12	Compression type: Shipments to original equipment manufacturers ----- 1,000 s tons..	100	(S)	217.4	112	(S)	266.7
34952 14	Other shipments ----- do..	44	(S)	56.2	45	(S)	52.2
34952 15	Extension type ----- do..	90	(S)	149.6	95	(S)	108.1
34952 17	Torsion type ----- do..	80	(S)	88.8	72	(S)	51.6
34952 00	Precision mechanical springs, n.s.k. -----	(NA)	(X)	5.3	(NA)	(X)	2.1
34953 --	Other wire springs -----	(NA)	(X)	810.0	(NA)	(X)	534.8
34953 11	Upholstery and furniture springs (unassembled): Seat end back springs for motor vehicles ----- 1,000 s tons..	7	(^e)	(^e)	5	(^e)	(^e)
34953 13	Springs for mattresses and bedsprings, excluding complete bedsprings ----- do..	9	(S)	37.4	12	67.3	79.8
34953 17	Spring units for box springs, innerspring mattresses, and duel-purpose sleep furniture ----- do..	12	(S)	335.6	17	(S)	198.9
34953 18	Spring units for upholstered furniture ----- do..	5	(S)	11.7	9	(S)	12.3
34953 19	Other upholstery and furniture springs (unassembled) ----- do..	8	(S)	\$256.0	12	(S)	\$115.4
34953 21	Valve springs ----- do..	9	(S)	63.0	9	(S)	27.3
34953 96	Other wire springs -----	(NA)	(S)	81.5	62	(S)	100.3
34953 00	Other wire springs, n.s.k. -----	(NA)	(X)	24.8	(NA)	(X)	.8
34950 --	Wire springs, n.s.k. -----	(NA)	(X)	147.2	(NA)	(X)	48.7
34950 00	Wire springs, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	100.7	(NA)	(X)	6.0
34950 02	Wire springs, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	46.5	(NA)	(X)	42.7
3496--	MISCELLANEOUS FABRICATED WIRE PRODUCTS						
	Total -----	(NA)	(X)	2 757.4	(NA)	(X)	2 821.5
34961 --	Noninsulated ferrous wire rope, cable, etc., not produced by wire drawers (see also code 33151) -----	(NA)	(X)	365.1	(NA)	(X)	391.4
34961 13	Rope and cable made from steel wire (excluding fabricated wire rope assemblies) ----- 1,000 s tons..	38	(S)	96.4	47	(S)	132.3
34961 15	Fabricated wire rope assemblies, including lifting slings ----- do..	41	(S)	79.2	39	(S)	(D)
34961 22	Composite rope and cable ----- do..	6	}	(S)	18	(S)	42.9
34961 31	Steel wire strand: Composite, except ACSR ----- 1,000 s tons..	3					
34961 35	For prestressed concrete ----- do..	9					
34961 33	Other, including guard rail cable ----- do..	2	(D)	(D)	1	(D)	(D)
34961 51	Wire forms, except rope assemblies ----- do..	66	(S)	12.2	10	70.7	42.7
34961 00	Noninsulated ferrous wire rope, cable, etc., not produced by wire drawers, n.s.k. -----	(NA)	(X)	44.4	(NA)	(X)	4.0
34964 --	Ferrous wire cloth and other ferrous woven wire products not produced by wire drawers (see also code 33157) -----	(NA)	(X)	140.4	(NA)	(X)	204.4
34964 41	Stainless steel: With meshes not finer than 12 wires to the lineal centimeter in warp or filling ----- mil sq ft..	15	(D)	(D)	(NA)	(D)	(D)
34964 43	With meshes finer than 12 but not finer than 36 wires to the lineal centimeter in warp or filling ----- do..	9	(D)	(D)	(NA)	(D)	(D)
34964 45	With meshes finer than 36 wires to the lineal centimeter in warp or filling ----- do..	7	(D)	(D)	(NA)	(D)	(D)
34964 51	Other: With meshes not finer than 12 wires to the lineal centimeter in warp or filling ----- mil sq ft..	19	(D)	(D)	(NA)	(D)	(D)
34964 53	With meshes finer than 12 but not finer than 36 wires to the lineal centimeter in warp or filling ----- do..	7	(D)	(D)	(NA)	(D)	(D)
34964 55	With meshes finer than 36 wires to the lineal centimeter in warp or filling ----- do..	5	(D)	(D)	(NA)	(D)	(D)
34964 00	Ferrous wire cloth and other ferrous woven wire products not produced by wire drawers, n.s.k. -----	(NA)	(X)	61.0	(NA)	(X)	1.4

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3496- —	MISCELLANEOUS FABRICATED WIRE PRODUCTS—Con.						
34965 —	Nonferrous wire cloth and other nonferrous woven wire products not produced by wire drawers (see also code 33575)	(NA)	(X)	119.1	(NA)	(X)	81.6
34965 17	Insect wire screening	6	(D)	(D)	4	(D)	(D)
34965 57	Paper machine wire cloth (fourdrinier and cylinder)	5	(S)	29.1	4	(D)	(D)
34965 65	Industrial wire cloth—nonferrous	20	(D)	(D)	25	(D)	(D)
34965 00	Nonferrous wire cloth and other nonferrous woven wire products not produced by wire drawers, n.s.k.	(NA)	(X)	15.9	(NA)	(X)	—
34966 —	Fencing and fence gates not produced by wire drawers (see also code 33156)	(NA)	(X)	130.6	(NA)	(X)	145.1
34966 23	Chain link fencing, excluding posts, gates, and fittings: Galvanized	1,000 s tons..					
34966 25	Other, including plastics coated	16	(S)	32.1	22	146.1	62.5
34966 27	Woven and welded: Galvanized	10		*16.5			
34966 29	Other, including plastics coated	3	(S)	14.1	15	**38.7	27.9
34966 35	Fence gates, posts, and fittings	3					
34966 61	Ornamental lawn fence	27	(S)	56.3	32	**227.1	54.1
34966 71	Fencing and fence gates not produced by wire drawers, n.s.k.	2			3	(S)	.6
34966 00	Other fabricated wire products not produced by wire drawers (see also code 33159)	(NA)	(X)	7.2	(NA)	(X)	—
34968 —	Wire chain: Tire	(NA)	(X)	1 332.9	(NA)	(X)	1 089.6
34968 41	Other wire chain: Stud-link	2	(D)	(D)	4	(S)	5.7
34968 45	Welded-link, except stud	1	(D)	(D)			
34968 46	All other wire chain, n.e.c.	9	(S)	27.5	25	(S)	84.1
34968 47	Barbed and twisted steel wire	14	(S)	30.9	5	6.3	1.6
34968 51	Wire bale ties	10		*20.7	11	(S)	26.3
34968 55	Welded steel wire fabrics: Concrete reinforcing mesh	5					
34968 61	Other welded steel wire fabrics	1,000 s tons..					
34968 65	Wire garment hangers	28	(S)	86.4	24	*113.4	51.9
34968 71	Wire carts, including household, grocery type, and industrial	10	(D)	(D)	22	(S)	42.2
34968 73	Steel wire cages	7	**27.0	54.6	9	66.9	27.6
34968 75	Paper clips	9	(X)	69.3	15	(X)	103.8
34968 77	Wire baskets	25	(X)	43.0	26	(X)	63.2
34968 81	Wire shelving, including oven, refrigerator, closet, barbeque grills	2	(X)	(D)	3	(X)	(*)
34968 85	Wire racks, including shoe, bottle, display, p.o.p.	41	(X)	65.9	(NA)	(NA)	(NA)
34968 99	Other wire products, including guards, flonsts' designs, etc.						
34968 00	Other fabricated wire products not produced by wire drawers, n.s.k.	156	(X)	333.7	315	(X)	*667.4
34960 —	Miscellaneous fabricated wire products, n.s.k.	(NA)	(X)	147.3	(NA)	(X)	5.9
34960 00	Miscellaneous fabricated wire products, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	669.3	(NA)	(X)	(NA)
34960 02	Miscellaneous fabricated wire products, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	569.6	(NA)	(X)	(NA)
34960 00	Miscellaneous fabricated wire products, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	94.9	(NA)	(X)	(NA)
3497- —	METAL FOIL AND LEAF						
	Total	(NA)	(X)	2 105.5	(NA)	(X)	1 758.0
34971 —	Converted unmounted aluminum foil packaging products (not laminated to other materials)	(NA)	(X)	707.6	(NA)	(X)	654.5
34971 32	Household, institutional, and freezer foil	10		307.7	13	308.6	506.9
34971 33	Semigid containers	5			5	*64.5	113.1
34971 37	Other unmounted foil flexible packaging products, including gift wrap	7		96.6	13	25.1	34.5
34971 00	Converted unmounted aluminum foil packaging products, n.s.k.	(NA)	(X)	3.7	(NA)	(NA)	(NA)
34972 —	Laminated aluminum foil rolls and sheets for flexible packaging uses	(NA)	(X)	912.9	(NA)	(X)	775.5
34972 10	Film/foil without paper	22	*75.7	133.3	24	**106.5	178.9
34972 22	Foil/paper: Extrusion laminated foil/paper combinations	18		167.6	30	**117.4	258.9
34972 25	Adhesive or wax laminated foil/paper combinations	28		187.7	24	(S)	162.4
34972 28	Foil/film/paper combinations	15	(S)	84.5	32	**60.7	145.8
34972 41	Gift wrap (laminated)	16	(S)	37.4	10	*6.1	29.4
34972 00	Laminated aluminum foil rolls, and sheets for flexible packaging use, n.s.k.	(NA)	(X)	60.4	(NA)	(NA)	(NA)
34973 —	Converted foil for nonpackaging applications and foil and leaf	(NA)	(X)	379.3	(NA)	(X)	324.4
34973 52	Aluminum: Unmounted or coated, plain or printed	10	**32.1	50.1	5	(S)	10.9
34973 54	Laminated to other materials	15		119.6	16	**83.7	91.7

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3497- --	METAL FOIL AND LEAF—Con.						
34973 --	Converted foil for nonpackaging applications and foil and leaf—Con.						
34973 58	Other foil, including composition (combination of two metals or more) and metal leaf (including aluminum leaf) ----- do--	16	*53.3	210.8	27	**65.2	221.9
34973 00	Converted foil for nonpackaging applications and foil and leaf, n.s.k.-----	(NA)	(X)	—	(NA)	(NA)	(NA)
34970 --	Metal foil and leaf, n.s.k.-----	(NA)	(X)	105.7	(NA)	(X)	3.6
34970 00	Metal foil and leaf, n.s.k., typically for establishments with 20 employees or more -----	(NA)	(X)	64.3	(NA)	(X)	(Z)
34970 02	Metal foil and leaf, n.s.k., typically for establishments with less than 20 employees -----	(NA)	(X)	41.4	(NA)	(X)	3.6
3498- --	FABRICATED PIPE AND FITTINGS						
	Total -----	(NA)	(X)	³¹ 766.7	(NA)	(X)	3 035.3
34980 --	Fabricated pipe and pipe fittings made from purchased pipe:						
34980 13	Iron and steel ----- 1,000 s tons--	285	(NA)	³¹ 766.7	356	(S)	2 254.0
34980 15	Aluminum and aluminum-base alloy ----- mil lb--	40			51	(S)	143.4
34980 17	Copper and copper-base alloy ----- do--	33			35	(S)	113.6
34980 19	All other nonferrous fabricated pipe and pipe fittings ----- do--	55			65	(S)	358.2
34980 00	Fabricated pipe and fittings, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	(NA)		(NA)	(X)	80.9
34980 02	Fabricated pipe and fittings, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	(NA)		(NA)	(X)	85.2
3499- --	FABRICATED METAL PRODUCTS, N.E.C.						
	Total -----	(NA)	(X)	5 910.3	(NA)	(X)	4 210.9
34991 --	Safes and vaults -----	(NA)	(X)	224.9	(NA)	(X)	282.6
34991 17	Safes and vaults (fire resistive and burglary resistive) (for additional detail, see Current Industrial Report MA-25H, Office Furniture) -----	14	(X)	124.3	24	(X)	120.3
34991 41	Safe deposit boxes ----- thousands--	6	(S)	52.4	8	987.4	48.2
34991 98	All other bank and security vaults and equipment (including bank security lockers, night depositories, security equipment for drive-in windows and similar equipment, and signaling and alarm equipment when sold together with bank equipment) and other interior equipment for safes and chests -----	6			15	(X)	114.0
34991 00	Safes and vaults, n.s.k. -----	(NA)			(NA)	(X)	.1
34992 --	Collapsible tubes -----	(NA)			(NA)	(X)	84.7
34992 11	Aluminum ----- mil gross--	6	(X)	82.0	(NA)	(X)	69.9
34992 13	Other, including tin, tin-coated, tin-lead alloy, and lead ----- do--	8	*2.8	30.7	8	*.8	13.3
34992 00	Collapsible tubes, n.s.k. -----	(NA)	(X)	14.7	(NA)	(X)	1.6
34993 --	Flat metal strapping:						
34993 00	Flat metal strapping ----- 1,000 s tons--	14	(S)	398.2	13	294.2	271.6
34995 --	Metal ladders-----	(NA)	(X)	216.3	(NA)	(X)	152.0
34995 11	Step and platform types ----- thousands--	16	(S)	67.5	28	**946.9	39.0
34995 21	Rung types (single, treble, extension, sectional, etc.) ----- do--	18	(S)	89.5	(NA)	(NA)	(NA)
34995 31	Ladder type step stools ----- do--	5	(S)	6.4	(NA)	(NA)	(NA)
34995 39	Ladder accessories (metal), including ladders, ladder feet, ladder jacks, roof hooks, bucket shelves, etc. -----	5	(X)	8.5	(NA)	(NA)	(NA)
34995 00	Metal ladders, n.s.k.-----	(NA)	(X)	44.4	(NA)	(X)	—
34996 --	Powder metallurgy parts (excluding bearings, gears, and machine cutting tools and all cemented carbide parts) -----	(NA)	(X)	563.2	(NA)	(X)	441.3
34996 11	Aluminum and aluminum base alloy ----- mil lb--	12	36.4	57.8	15	**53.7	64.9
34996 33	Copper and copper-base alloy ----- do--	22	(S)	19.7	25	(S)	38.1
34996 55	Iron and steel ----- do--	65	(S)	227.4	70	**482.2	171.3
34996 66	Nickel-cobalt-base super alloy materials ----- do--	9	(S)	21.7	4	(S)	8.4
34996 77	Tungsten metal and tungsten-base alloy ----- do--	10	2.7	80.2	12	(S)	73.0
34996 88	Other materials ----- do--	15	(S)	105.0	31	(S)	85.7
34996 00	Powder metallurgy parts (excluding bearings, gears, and machine cutting tools and all cemented carbide parts), n.s.k. -----	(NA)	(X)	51.4	(NA)	(X)	—
34998 --	All other fabricated metal products, n.e.c. -----	(NA)	(X)	2 178.3	(NA)	(X)	2 277.1
34998 11	Permanent magnets, except ceramic permanent magnets -----	22	(X)	158.4	29	(X)	122.7
34998 19	Fabricated assemblies of railroad frogs, switches, and crossings ----- 1,000 s tons--	12	(S)	81.3	10	**118.9	165.0
34998 21	Steel boxes for packaging and shipping -----	21	(X)	41.4	20	(X)	58.8
34998 25	Steel boxes other than for shipping (ammunition boxes, jewelry cases, etc.) -----	43	(X)	84.9	(NA)	(NA)	(NA)
34998 29	Stamped metal wheels for golf carts, lawn mowers, etc., (disc type) -----	6	(X)	64.1	8	(X)	26.7
34998 31	Metal aerosol valves -----	4	(X)	13.0	4	(X)	13.6
34998 39	Metal spools and reels -----	18	(X)	60.2	19	(X)	61.7
34998 99	Other fabricated metal products, n.e.c., including chests, metal ironing boards, and metal memorial tablets and grave markers -----	718	(X)	1 368.5	998	(X)	1 828.7
34998 00	All other fabricated metal products, n.e.c., n.s.k. -----	(NA)	(X)	306.5	(NA)	(X)	—

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

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1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3499- —	FABRICATED METAL PRODUCTS, N.E.C.—Con.						
34990 —	Fabricated metal products, n.e.c.	(NA)	(X)	2 247.4	(NA)	(X)	701.5
34990 00	Fabricated metal products, n.e.c., n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	1 869.1	(NA)	(X)	594.5
34990 02	Fabricated metal products, n.e.c., n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	378.2	(NA)	(X)	107.0

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-records data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

¹Data reported by all producers, not just those with shipments of \$100,000 or more.

²For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

³Detailed 7-digit product data were not available in time for publication in this report. These data will be published in the final report which supercedes this report.

⁴For 1982, product code 34916 65 was included with product code 34916 98 to avoid disclosing data for individual companies.

⁵For 1982, product code 34931 65 was combined with product code 34931 00 to avoid disclosing data for individual companies.

⁶For 1987 and 1982, product code 34953 11 is included with product code 34953 19.

Table 3. Materials Consumed by Kind: 1987 and 1982

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3491, INDUSTRIAL VALVES				
	Materials, parts, containers, and supplies	(X)	1 619.1	(NA)	(NA)
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes 1,000 s tons...	(S)	46.4	(NA)	(NA)
331012	Sheet and strip do...	(S)	4.2	(NA)	(NA)
331013	Plates do...	(S)	6.3	(NA)	(NA)
331053	All other do...	(S)	4.0	(NA)	(NA)
	Alloy steel, except stainless:				
331021	Bars and bar shapes 1,000 s tons...	(S)	19.2	(NA)	(NA)
331029	All other do...	(S)	5.0	(NA)	(NA)
	Stainless steel:				
331033	Sheet and strip 1,000 s tons...	(S)	5.6	(NA)	(NA)
331050	All other do...	(S)	59.1	(NA)	(NA)
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/ or drawn shapes mil lb...	(S)	40.2	(NA)	(NA)
335143	Plate, sheet, and strip, including military cups and discs do...	*.2	.6	(NA)	(NA)
335152	Pipe and tube do...	(S)	2.0	(NA)	(NA)
	Aluminum and aluminum-base alloy:				
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. mil lb...	(S)	7.4	(NA)	(NA)
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. do...	(S)	3.3	(NA)	(NA)
335792	Insulated copper wire and cable, except magnet wire do...	(D)	(D)	(NA)	(NA)
	Primary metals:				
331051	Pig iron, excluding silvery iron 1,000 s tons...	(S)	1.8	(NA)	(NA)
333401	Aluminum and aluminum-base refinery shapes, (ingot, slug, etc.) do...	(D)	(D)	(NA)	(NA)
333122	Copper and copper-base alloy refinery shapes do...	(S)	37.4	(NA)	(NA)
	Scrap, excluding home scrap:				
190023	Iron and steel 1,000 s tons...	(S)	21.9	(NA)	(NA)
190024	Copper and copper-base alloy do...	**1.6	1.5	(NA)	(NA)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) 1,000 s tons...	(S)	127.7	(NA)	(NA)
332045	Steel do...	(S)	142.6	(NA)	(NA)
336005	Aluminum and aluminum-base alloy mil lb...	(S)	37.8	(NA)	(NA)
336006	Copper and copper-base alloy do...	*29.4	50.1	(NA)	(NA)
336008	Other nonferrous do...	(S)	17.9	(NA)	(NA)
346200	Iron and steel forgings 1,000 s tons...	(S)	38.3	(NA)	(NA)
345001	Bolts, nuts, screws, rivets, and screw machine products do...	(X)	84.6	(NA)	(NA)
349403	Metal valves and fittings purchased for further assembly do...	(X)	75.5	(NA)	(NA)
362110	Electric motors and generators less than 1 hp (timing motors, synchronous and subsynchronous) millions...	(S)	10.9	(NA)	(NA)
265001	Paperboard boxes and containers do...	(X)	12.0	(NA)	(NA)
356200	Ball and roller bearings, mounted and unmounted do...	(X)	1.9	(NA)	(NA)
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets do...	(X)	26.1	(NA)	(NA)
308006	Fabricated plastics products, except gaskets do...	(X)	19.2	(NA)	(NA)
329300	Gaskets (all types) do...	(X)	20.5	(NA)	(NA)

See footnotes at end of table.

Table 3. Materials Consumed by Kind: 1987 and 1982—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3491, INDUSTRIAL VALVES—Con.				
346901	Metal stampings	(X)	15.1	(NA)	(NA)
349012	Fabricated wire products	(X)	7.8	(NA)	(NA)
970099	All other materials and components, parts, containers, and supplies	(X)	332.9	(NA)	(NA)
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	325.6	(NA)	(NA)
	INDUSTRY 3492, FLUID POWER VALVES AND HOSE FITTINGS				
	Materials, parts, containers, and supplies	(X)	831.2	(NA)	(NA)
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	(S)	50.1	(NA)	(NA)
331012	Sheet and strip	(S)	.2	(NA)	(NA)
331013	Plates	(S)	1.3	(NA)	(NA)
331053	All other	(S)	2.7	(NA)	(NA)
	Alloy steel, except stainless:				
331021	Bars and bar shapes	(S)	7.9	(NA)	(NA)
331029	All other	(S)		(NA)	(NA)
	Stainless steel:				
331033	Sheet and strip	(S)	4.8	(NA)	(NA)
331050	All other	**13.6	36.7	(NA)	(NA)
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/ or drawn shapes	(S)	41.4	(NA)	(NA)
335143	Plate, sheet, and strip, including military cups and discs	(S)		(NA)	(NA)
335152	Pipe and tube	(S)		(NA)	(NA)
	Aluminum and aluminum-base alloy:				
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	(S)	9.2	(NA)	(NA)
335008	All other wire, rolled rod and bar, powder, welded tubing, etc.	(S)	3.4	(NA)	(NA)
335792	Insulated copper wire and cable, except magnet wire	(D)		(NA)	(NA)
	Primary metals:				
331051	Pig iron, excluding silvery iron	-	-	(NA)	(NA)
333401	Aluminum and aluminum-base refinery shapes, (ingot, slug, etc.)	(S)	1.7	(NA)	(NA)
333122	Copper and copper-base alloy refinery shapes	(D)		(NA)	(NA)
	Scrap, excluding home scrap:				
190023	Iron and steel		9.7	(NA)	(NA)
190024	Copper and copper-base alloy			(NA)	(NA)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable)	**10.7	13.2	(NA)	(NA)
332045	Steel	(S)	8.6	(NA)	(NA)
336005	Aluminum and aluminum-base alloy	(S)	16.4	(NA)	(NA)
336006	Copper and copper-base alloy	(S)	4.7	(NA)	(NA)
336008	Other nonferrous	(S)	3.5	(NA)	(NA)
346200	Iron and steel forgings	(S)	5.7	(NA)	(NA)
345001	Bolts, nuts, screws, rivets, and screw machine products	(X)	95.5	(NA)	(NA)
349403	Metal valves and fittings purchased for further assembly	(X)	60.5	(NA)	(NA)
362110	Electric motors and generators less than 1 hp (timing motors, synchronous and subsynchronous)	73.3	4.1	(NA)	(NA)
265001	Paperboard boxes and containers	(X)	6.9	(NA)	(NA)
356200	Ball and roller bearings, mounted and unmounted	(X)	.3	(NA)	(NA)
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets	(X)	8.6	(NA)	(NA)
308006	Fabricated plastics products, except gaskets	(X)	3.9	(NA)	(NA)
329300	Gaskets (all types)	(X)	3.1	(NA)	(NA)
346901	Metal stampings	(X)	6.8	(NA)	(NA)
349012	Fabricated wire products	(X)	2.2	(NA)	(NA)
970099	All other materials and components, parts, containers, and supplies	(X)	167.2	(NA)	(NA)
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	247.4	(NA)	(NA)
	INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE				
	Materials, parts, containers, and supplies	(X)	159.4	(X)	162.8
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	(S)	15.2	21.1	7.7
331012	Sheet and strip	(S)	12.9	**13.5	13.1
331017	Wire and wire products	(S)	15.7	(S)	10.2
331019	All other carbon steel mill shapes and forms	**1.2	.6	(S)	31.1
	Alloy steel, except stainless:				
331021	Bars and bar shapes	104.2	43.0	125.1	65.6
331029	All other alloy steel mill shapes and forms	(S)	4.3	*8.2	3.8
	Stainless steel mill shapes and forms:				
331033	Sheet and strip	*2.0	9.0	**1.8	7.2
331050	All other stainless steel mill shapes and forms	(S)	4.3	(S)	1.8
335107	Copper and copper-base alloy	(S)	1.4	(S)	4.9
335001	Aluminum and aluminum-base alloy	(S)	.1	(S)	3.4
332045	Steel castings (rough and semifinished)9	.8	(D)	(D)
345001	Bolts, nuts, screws, rivets, and screw machine products	(X)	5.5	(X)	3.6
970099	All other materials and components, parts, containers, and supplies	(X)	19.1	(X)	18.3
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	27.6	(X)	10.7

See footnotes at end of table.

Table 3. Materials Consumed by Kind: 1987 and 1982—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3494, VALVES AND PIPE FITTINGS, N.E.C.				
	Materials, parts, containers, and supplies	(X)	810.8	(NA)	(NA)
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	(S)	23.2	(NA)	(NA)
331012	Sheet and strip	(S)	17.6	(NA)	(NA)
331013	Plates	*7.4	4.5	(NA)	(NA)
331053	All other	*10.9	8.6	(NA)	(NA)
	Alloy steel, except stainless:				
331021	Bars and bar shapes	(S)	4.7	(NA)	(NA)
331029	All other	*1.7	3.1	(NA)	(NA)
	Stainless steel:				
331033	Sheet and strip	*4.2	9.9	(NA)	(NA)
331050	All other	*6.9	25.0	(NA)	(NA)
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/ or drawn shapes	*34.2	41.5	(NA)	(NA)
335143	Plate, sheet, and strip, including military cups and discs	**1.4	1.3	(NA)	(NA)
335152	Pipe and tube	29.9	39.8	(NA)	(NA)
	Aluminum and aluminum-base alloy:				
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	(D)	(D)	(NA)	(NA)
335008	All other wire, rolled rod and bar, powder, welded tubing, etc.	**3	1.1	(NA)	(NA)
335792	Insulated copper wire and cable, except magnet wire	(D)	(D)	(NA)	(NA)
	Primary metals:				
331051	Pig iron, excluding silvery iron8	.2	(NA)	(NA)
333401	Aluminum and aluminum-base refinery shapes, (ingot, slug, etc.)	(D)	(D)	(NA)	(NA)
333122	Copper and copper-base alloy refinery shapes	15.8	24.2	(NA)	(NA)
	Scrap, excluding home scrap:				
190023	Iron and steel	173.7	14.9	(NA)	(NA)
190024	Copper and copper-base alloy	(D)	(D)	(NA)	(NA)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable)	(S)	51.4	(NA)	(NA)
332045	Steel	(S)	5.2	(NA)	(NA)
336005	Aluminum and aluminum-base alloy	(S)	2.7	(NA)	(NA)
336006	Copper and copper-base alloy	**21.7	28.2	(NA)	(NA)
336008	Other nonferrous	(S)	14.3	(NA)	(NA)
346200	Iron and steel forgings	(S)	21.4	(NA)	(NA)
345001	Bolts, nuts, screws, rivets, and screw machine products	(X)	18.9	(NA)	(NA)
349403	Metal valves and fittings purchased for further assembly	(X)	15.5	(NA)	(NA)
362110	Electric motors and generators less than 1 hp (timing motors, synchronous and subsynchronous)	(S)	2.5	(NA)	(NA)
265001	Paperboard boxes and containers	(X)	8.8	(NA)	(NA)
	Ball and roller bearings, mounted and unmounted	(X)	1.8	(NA)	(NA)
356200	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets	(X)	5.0	(NA)	(NA)
308006	Fabricated plastics products, except gaskets	(X)	5.4	(NA)	(NA)
329300	Gaskets (all types)	(X)	7.3	(NA)	(NA)
346901	Metal stampings	(X)	2.7	(NA)	(NA)
	Fabricated wire products	(X)	1.9	(NA)	(NA)
970099	All other materials and components, parts, containers, and supplies	(X)	152.6	(NA)	(NA)
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	226.6	(NA)	(NA)
	INDUSTRY 3495, WIRE SPRINGS				
	Materials, parts, containers, and supplies	(X)	604.5	(X)	441.9
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	(S)	1.4	(S)	.7
331012	Sheet and strip	(S)	100.0	(S)	38.2
331017	Wire and wire products	(S)	178.9	357.1	214.3
331019	All other carbon steel mill shapes and forms	(S)	8.3	36.4	37.8
	Alloy steel, except stainless:				
331021	Bars and bar shapes	(S)	2.9	(S)	.9
331029	All other	(S)	16.6	*33.2	21.9
	Stainless steel mill shapes and forms:				
331033	Sheet and strip	(S)	7.8	(S)	7.2
331050	All other	(S)	18.1	**2.9	12.3
335107	Copper and copper-base alloy	(S)	2.9	(S)	4.9
335001	Aluminum and aluminum-base alloy	(X)	1.4	(S)	3.4
332045	Steel castings (rough and semifinished)	(X)	(3)	(S)	(3)
345001	Bolts, nuts, screws, rivets, and screw machine products	(X)	8.1	(X)	3.8
970099	All other materials and components, parts, containers, and supplies	(X)	3185.1	(X)	398.7
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	73.0	(X)	27.8
	INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS				
	Materials, parts, containers, and supplies	(X)	1 128.0	(X)	1 035.1
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	**37.9	21.4	(S)	10.9
331012	Sheet and strip	*35.1	22.4	(S)	24.3
331015	Structural shapes	**10.4	6.8	(S)	15.7
331017	Wire and wire products	*636.3	284.5	(S)	441.1
331019	All other carbon steel mill shapes and forms	*71.7	27.0	63.3	26.5
331020	Alloy steel, except stainless	(14)	(3)	10.3	8.7

See footnotes at end of table.

Table 3. **Materials Consumed by Kind: 1987 and 1982—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS—Con.					
Mill shapes and forms, except castings—Con.					
Stainless steel:					
331033	Sheet and strip ----- 1,000 s tons..	(S)	7.8	(S)	8.5
331050	All other ----- do..	**12.9	32.6	(S)	41.4
335105	Copper and copper-base alloy ----- mil lb..	(S)	1.9	(S)	18.1
Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil ----- mil lb..	(S)	2.5	(S)	4.7
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	**1.6	2.0	(S)	1.9
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	**8.8	11.4	**10.0	11.5
332045	Steel castings, (rough and semifinished) ----- 1,000 s tons..	(S)	.9	(S)	1.7
308007	Plastics products consumed in the form of sheets, rods, tubes, etc. -----	(X)	11.3	(NA)	(NA)
345001	Bolts, nuts, screws, rivets, and screw machine products -----	(X)	9.5	(X)	4.8
970099	All other materials and components, parts, containers, and supplies -----	(X)	³ 196.9	(X)	270.4
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	486.2	(X)	144.9
INDUSTRY 3497, METAL FOIL AND LEAF					
Materials, parts, containers, and supplies -----		(X)	1 337.1	(X)	1 062.8
Aluminum and aluminum-base alloy:					
335303	Sheet and plate ----- mil lb..	99.0	73.4	372.6	(D)
335335	Plain foil ----- do..			**135.7	193.4
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, extruded shapes, etc.) ----- do..	509.7	461.1	372.6	286.4
349702	Aluminum foil, converted (quantity represents metal content) ----- do..	60.0	80.3	30.7	57.3
335107	Copper and copper-base alloy ----- do..	38.4	39.2	(FF)	(FF)
289101	Glues and adhesives ----- do..	52.7	28.5	(FF)	(FF)
289300	Printing ink ----- do..	*23.2	34.4	(NA)	(NA)
285100	Paints and allied products (stains, lacquers, pigments, etc.) ----- 1,000 gal..	(S)	2.6	(NA)	(NA)
Industrial inorganic chemicals -----					
281900	Pressure sensitive base stock (self-adhesive), including paper, film, foil, etc. -----	(X)	4.1	(NA)	(NA)
267231	Plastics products consumed in the form of sheets, rods, tubes, and other shapes -----	(X)	5.2	(NA)	(NA)
308007	Paper and paperboard containers, including shipping sacks and other paper packaging supplies -----	(X)	93.1	(X)	54.0
260091	All other materials and components, parts, containers, and supplies -----	(X)	97.2	(X)	132.0
970099	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	338.2	(X)	337.1
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	79.2	(X)	2.6
INDUSTRY 3498, FABRICATED PIPE AND FITTINGS					
Materials, parts, containers, and supplies -----		(X)	797.7	(X)	1 485.1
Mill shapes and forms, except castings:					
Carbon steel:					
331011	Bars and bar shapes ----- 1,000 s tons..	*22.8	16.7	(S)	13.2
331012	Sheet and strip ----- do..	*22.2	12.4	*54.7	24.7
331013	Plates ----- do..	**17.1	8.7	**111.3	55.8
331015	Structural shapes ----- do..	(S)	2.3	(S)	96.4
331016	Pipe ----- do..	185.7	142.8	**780.5	562.3
331017	Wire and wire products ----- do..	**3.0	3.9	**1.6	1.5
331019	All other carbon steel mill shapes and forms ----- do..	(S)	24.0	46.1	60.7
Alloy steel, except stainless:					
331026	Pipe ----- 1,000 s tons..	(S)	28.5	(S)	53.8
331021	Bars and bar shapes ----- do..	(S)	1.9	(S)	14.5
331029	All other ----- do..	(S)	12.1	*8.3	23.8
Stainless steel:					
331036	Pipe ----- 1,000 s tons..	(S)	17.7	(S)	46.2
331033	Sheet and strip ----- do..	(S)	9.6	(S)	2.6
331050	All other ----- do..	(S)	13.1	(S)	7.0
Copper and copper-base alloy:					
335102	Rod, bar, and mechanical wire, including extruded and/ or drawn shapes ----- mil lb..	(D)	(D)	(S)	3.5
335143	Plate, sheet, and strip, including military cups and discs ----- do..	(D)	(D)	(S)	.8
335152	Pipe and tube ----- do..	(S)	19.6	**32.7	32.4
Aluminum and aluminum-base alloys:					
335301	Sheet, plate, and foil ----- mil lb..	.2	.3	1.7	1.9
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	11.7	(S)	31.8
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) ----- do..	(S)	6.9	5.8	5.3
333402	Aluminum and aluminum-base alloy, including ingot, pig, shot, etc. ----- 1,000 s tons..	(S)	2.1	(NA)	(NA)
349450	Metal fittings, flanges, and unions for piping systems -----	(X)	22.9	(X)	66.1
Castings (rough and semifinished):					
332011	Iron (gray and malleable) ----- 1,000 s tons..	(S)	6.4	**8.4	8.9
332045	Steel ----- do..	(S)	1.1	(D)	(D)
336005	Aluminum and aluminum-base alloy ----- mil lb..			(S)	.2
336006	Copper and copper-base alloy ----- do..	(S)	.2	*1.2	3.5
336008	Other nonferrous ----- do..			(NA)	(NA)
346200	Iron and steel forgings ----- 1,000 s tons..	(S)	5.0	(S)	8.9
346310	Aluminum and aluminum-base alloy forgings ----- mil lb..	(D)	(D)	(S)	.8
333010	Nonferrous plating metals (chromium, nickel, zinc, etc.) -----	(X)	.8	(D)	(D)
339915	Metal powders ----- mil lb..	(D)	(D)	(D)	(D)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and other shapes ----- do..	(S)	5.2	**10.2	4.0
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	1.4	(S)	.9

See footnotes at end of table.

Table 3. **Materials Consumed by Kind: 1987 and 1982—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3498, FABRICATED PIPE AND FITTINGS—Con.				
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	(X)	5.4	(X)	7.0
346901	Metal stampings	(X)	11.8	(X)	.8
970099	All other materials and components, parts, containers, and supplies	(X)	93.4	(X)	170.3
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	305.9	(X)	152.8
	INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.				
	Materials, parts, and supplies	(X)	2441.3	(X)	1 763.8
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes	(S)	24.6	*298.5	132.0
331012	Sheet and strip	**455.7	206.9	663.0	321.4
331013	Plates	(S)	26.5	**125.2	60.3
331015	Structural shapes	(S)	13.4	41.1	17.4
331016	Pipe	(S)	8.3	**7.3	4.8
331017	Wire and wire products	(S)	6.1	(S)	10.1
331019	All other carbon steel mill shapes and forms	(S)	15.0	165.8	19.7
	Alloy steel, except stainless:				
331026	Pipe	(S)	.4	(S)	1.6
331021	Bars and bar shapes	(S)	4.5	(S)	7.2
331029	All other alloy steel mill shapes and forms	(S)	5.5	*37.8	23.3
	Stainless steel:				
331036	Pipe	(S)	3.5	**4	.9
331033	Sheet and strip	*9.6	24.8	**13.2	30.3
331050	All other stainless steel mill shapes and forms	(S)	11.0	(S)	7.2
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/ or drawn shapes	*2.9	4.3	*11.9	12.0
335143	Plate, sheet, and strip, including military cups and discs	(S)	3.1	(S)	3.7
335152	Pipe and tube	**1.3	1.4	(S)	.4
	Aluminum and aluminum-base alloys:				
335301	Sheet, plate, and foil	(S)	17.5	(S)	36.9
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	*49.3	52.9	*54.3	58.6
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.)	(S)	8.5	**14.2	13.2
333402	Aluminum and aluminum-base alloy, including ingot, pig, shot, etc.	(S)	2.1	(NA)	(NA)
349450	Metal fittings, flanges, and unions for piping systems	(X)	.2	(NA)	(NA)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable)	(S)	7.2	*13.2	17.7
332045	Steel	**6.7	12.7	(S)	13.3
336005	Aluminum and aluminum-base alloy	(S)	17.8	(S)	6.2
336006	Copper and copper-base alloy	(S)	.8	**1.4	2.6
336008	Other nonferrous	(S)	3.4	*13.5	10.2
346200	Iron and steel forgings	(S)	1.1	(S)	4.9
346310	Aluminum and aluminum-base alloy forgings	(S)	.1	(S)	1.4
333010	Nonferrous plating metals (chromium, nickel, zinc, etc.)	(X)	2.6	(X)	3.2
339915	Metal powders	**89.6	56.6	*77.2	31.8
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and other shapes	(S)	12.5	**12.0	7.4
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels	(S)	9.1	*1 518.7	14.8
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	(X)	13.6	(X)	14.3
346901	Metal stampings	(X)	16.3	(X)	13.3
970099	All other materials and components, parts, containers, and supplies	(X)	532.1	(X)	456.7
971000	Materials, parts, and supplies, n.s.k. ²	(X)	1 315.3	(X)	404.7

¹For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

²Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

³Data are combined with material code 970099 to avoid disclosing data for individual companies.



APPENDIX

Scope and Coverage and Explanation of Terms

GENERAL

The 1987 Census of Manufactures is the 32nd census of manufacturing establishments conducted in the United States. For 1987, it was conducted as part of the economic censuses, which included the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses, under authority of title 13 of the United States Code. Title 13 specifies that an economic census be conducted every 5 years to cover years ending in 2 and 7.

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of manufactures is conducted on an establishment basis. All manufacturing establishments with one paid employee or more at any time during the year are covered by the census of manufactures. Therefore, a company operating at more than one location is required to file a separate report for each location. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units which service manufacturing establishments of the same company. Where these auxiliary operations are conducted at the same location as the manufacturing operation, they are usually included in the report for the operating manufacturing establishment.

Use of Administrative Records

From a universe of approximately 350,000 manufacturing establishments in the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of the small establishment nonmail cases was done on an industry-by-industry basis. A variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. The cutoffs were selected so the administrative-record cases would account for approximately 3 percent or less of the value of shipments for the industry. These cutoffs were then adjusted so that all single-establishment companies with less than 5 employees were excluded from the mail canvass, while all establishments with more than 20 employees were included. Where establishments in the 5 to 20 employee size range were included in the mail canvass, an abbreviated census form was frequently used.

For these nonmail establishments, (and a small number of larger establishment whose reports were not received at the time the data were tabulated) data on employment, payroll, and receipts were obtained from administrative records of other government agencies rather than from census forms. The administrative-record information was then used in conjunction with industry averages to estimate the data for these establishments. The value of shipments and cost of materials were not distributed among specific products and materials but were included in the product and material "not specified by kind" (n.s.k.) categories.

EXPLANATION OF TERMS

Number of establishments and companies—A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

All employees—Includes all full-time and part-time employees on the payrolls at any time during the year. Included are all persons on paid sick leave, paid holidays, and paid vacations. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for midmonth payroll periods of March, May, August, and November.

Production workers—Includes workers up through the working-supervisor level engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (e.g., power-plant), recordkeeping, and other closely associated services. Truckdrivers delivering ready-mixed concrete are also included in production workers.

Other employees—Includes nonproduction personnel, including those engaged in the following activities: supervision above working-supervisor level, sales (including driver/salespersons), sales delivery (truckdrivers and helpers), advertising, credit collection, installation and

servicing of own product, clerical and routine office functions, executive, purchasing, finance, legal, personnel (including cafeteria, etc.), professional, and technical employees.

Payroll—Includes the gross earnings for the “employees” defined above, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees’ Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Respondents were told that in reporting they could follow the definition of payrolls used for calculating the Federal withholding tax.

Production-worker hours—Covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the plant.

Cost of materials—Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuels consumed, regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (a) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year; (b) electric energy purchased; (c) fuels consumed for heat, power, or generating electricity; (d) work done by others on materials or parts furnished by manufacturing establishments (contract work); and (e) products bought and resold in the same condition.

Specific materials consumed (table 3)—In addition to the total cost of materials which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. These inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. Establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which administrative records were used was estimated as “not specified by kind” (n.s.k.).

Value of shipments and other receipts—Generally refers to received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all

miscellaneous receipts such as receipts for contract work performed for others, installation and repair receipts, sale of scrap, and sale of products bought and resold without further processing. Included are all items made by or for the establishment from materials owned by it whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In a few industries, the value of production or value of work completed is used instead of value of shipments. These industries are identified in the introduction and are footnoted in table 1.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, that is, including not only the direct costs of production but also a reasonable proportion of “all other costs” (including company overhead and profit).

Shipments or production of individual products (table 2)—In the 1987 census, detailed shipment information was collected for approximately 11,000 individual products. These products are identified by a seven-digit code and are grouped into approximately 1,500 classes of products, which in turn are primary to 459 four-digit industries. Data at the five-digit product-class level have been collected each year as part of the annual survey of manufactures. Information at the seven-digit level, collected for many industries in the current industrial reports program, is not included in this table.

Value added by manufacture—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured plus receipts for services rendered. The result of this calculation is then adjusted by the addition of value added by merchandising operations (that is, the difference between the sales value and cost of merchandise sold without further manufacturing, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1), value added is adjusted only for the change in work-in-process inventories between the beginning and end of the year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

Value added avoids the duplication in the figure for value of shipments which results from the use of products of some establishments as materials by others. Value

added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

Expenditures for new plant and equipment—Establishments in operation and any known plants under construction were asked to report their expenditures for (a) permanent additions and major alterations to manufacturing establishments and (b) new machinery and equipment used for replacement and additions to plant capacity if they are of the type for which depreciation accounts are ordinarily maintained.

These totals exclude expenditures for used plant and equipment, expenditures for land, and cost of maintenance and repairs charged as current operating expenses. Data for used plant and equipment will be published in the final industry bulletin.

End-of-year inventories—Comprised of (a) finished products; (b) work-in-process; and (c) materials, supplies, fuels, etc. Beginning in 1982, respondents were asked to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method.

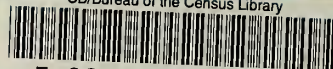
Therefore, 1982 through 1987 data for inventories are not strictly comparable to prior-year data.

Specialization and coverage ratios—An establishment is classified in a particular industry if its shipments of primary products of the industry exceed in value its shipments of the products of any other single industry. An establishments' shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). The following ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in table 1 and data on product shipments shown in table 2.

Specialization ratio—Represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio—Represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments, wherever classified.

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